UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,397	03/31/2004	Ali-Reza Adl-Tabatabai	42P18152	7577

8791   7590   01/10/2008
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ART UNIT	PAPER NUMBER
2191	

MAIL DATE	DELIVERY MODE
01/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

Office Action Summary	Application No.	Applicant(s)
	10/815,397	ADL-TABATABAI ET AL.
	Examiner	Art Unit	
	Philip Wang	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>31 March 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-28</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-28</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 08-06)   Office Action Summary   Part of Paper No./Mail Date 20070730

Detail Action

1.   This office action is in response to the application filed on 3/31/2004.

2.   Claims 1-28 are pending.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claims 5, 7, 10, 11, 14, 22, and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 5 recites the limitation of "may be guarded" in "a program object that may be guarded". It is not clear if the program object is guarded or not. Claims 7, 10 depend on claim 5 and suffer the same deficiency. Claims 11, 14, 22, and 25 suffer the same deficiency for the reason above.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1, 3, 4, 18, 20, 21 are rejected under 35 U.S.C. 102(e) as being

anticipated by Bacon et al. (USPGPub. No. 2005/0149588).

As per claim 1,

Bacon et al. disclose

- receiving an access request for a program object; performing a combined

    check for a null reference and for a read barrier for the program object;

    and if the combined check is affirmative, performing a recovery

    operation (Abstract, "…meet real-time requirements

    combined a null-check required for an application

    with a null check required by its read barrier…";

    [0039], lines 20-23, "…allows the null-check required

    by the Java object…be folded into the null-check as

    required by the barrier…"; [0039], lines 23-40,

    "…Since the pointer can be null, the barrier can not

    perform forwarding unconditionally…any exception…A

straight forward implementation...required a compare, a

branch and load" where it discloses operations to

handle exceptions.).

As per claim 3,

the rejection of claim 1 is incorporated;

Bacon et al. disclose

- wherein the method is performed in a managed runtime environment

  (MRTE)([0039], lines 12-13, "...in connection with Java

  programs..."; line 26, "...the run time system...").

As per claim 4,

the rejection of claim 1 is incorporated;

Bacon et al. disclose

- wherein the access request is a single-byte access and further comprising

  implementing the access request as a multiple-byte access by reading

  one or more preceding or succeeding bytes of data ([0027], lines

  11-12, "... a reference to an array of integers is

  loaded and then used in a loop...").

As per claims 18, 20, and 21, they are the machine-readable medium claims reciting the

same limitations of method claims 1, 3,and 4 respectively and are rejected for the same

reason set forth in connection of the rejections of claims 1, 3 and 4 above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 2, 5-17, 19, and 22-28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Bacon et al. (USPGPub. No. 2005/0149588) in view of Arimilli et al.

(US Patent No. 6,880,073).

As per claim 2,

the rejection of claim 1 is incorporated;

Bacon et al. do not specifically disclose

- performing a speculative load in response to the read request; and

  determining whether the speculative load is successful.

However, Arimilli et al. disclose

- performing a speculative load in response to the read request; and

  determining whether the speculative load is successful (c4:38-

  43,"...speculation by executing instructions...load...and an

  acknowledgment is received.").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to incorporate the teachings of Arimilli et al. into the teachings

of Bacon et al. to include performing a speculative load in response to the read request;

and determining whether the speculative load is successful. The modification would be

obvious to one of ordinary skill in the art to want to improve processing efficiency as

suggested by Arimilli et al. (see Background of Invention, "...improving

processing efficiency...").

As per claim 5,

Bacon et al. disclose

- receiving a subject code, the subject code including an access to a

  program object that may be guarded; and compiling the subject code into

  machine executable code, the machine executable code including a read

  barrier check for the program object, ([0039], for example, lines

  10-11, "...a read barrier by implementing the read

barrier in an optimizing compiler..." where a compiler

receives program code and compiles the program code.)

- and if the read barrier check of the access fails, performing a

  recovery([0039], lines 23-40, "...Since the pointer can be

  null, the barrier can not perform forwarding

  unconditionally...any exception...A straight forward

  implementation...required a compare, a branch and load"

  where it discloses operations to handle exceptions.).

Bacon et al. do not specifically disclose

- the read barrier check comprising: performing a speculative load to access

  the program object; performing a speculation check for the speculative

  load.

However, Arimilli et al. disclose

- the read barrier check comprising: performing a speculative load to access

  the program object; performing a speculation check for the speculative

  load (c4:38-43, "...speculation by executing

  instructions...load...and an acknowledgment is

  received.").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to incorporate the teachings of Arimilli et al. into the teachings

of Bacon et al. to include the limitation, "the read barrier check comprising: performing

a speculative load to access the program object; performing a speculation check for

the speculative load." The modification would be obvious to one of ordinary skill in the

art to want to improve processing efficiency as suggested by Arimilli et al. (see

Background of Invention, "…improving processing efficiency…").

As per claim 6,

the rejection of claim 5 is incorporated;

And further the combination of Bacon et al. and Arimilli disclose

- wherein the speculative load (Arimilli, c4: 38-43) operates as a

  combined check of a null reference and a check for the read barrier(Bacon

  - [0039], lines 20-23, "…allows the null-check required

  by the Java object…be folded into the null-check as

  required by the barrier…").

As per claim 7,

the rejection of claim 5 is incorporated;

Bacon et al. disclose

- wherein the object code is compiled for a managed runtime environment

(MRTE) (`[0039], lines 12-13, "...in connection with Java`

`programs..."; line 26, "...the run time system...").`

As per claim 8,

the rejection of claim 5 is incorporated;

Bacon et al. do not specifically disclose

- wherein the recovery comprises testing whether the failure of the

speculative load results from an access to a program object that is

guarded.

However, Arimilli et al. disclose

- wherein the recovery comprises testing whether the failure of the

speculative load results from an access to a program object that is

guarded (`c4:38-43,"...speculation by executing`

`instructions....barrier operation..." where barrier`

`operation is used for guarding program object.).`

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to incorporate the teachings of Arimilli et al. into the teachings

of Bacon et al. to include the limitation, "wherein the recovery comprises testing

whether the failure of the speculative load results from an access to a program object

that is guarded". The modification would be obvious to one of ordinary skill in the art to

want to improve processing efficiency as suggested by Arimilli et al. (see

Background of Invention, "...improving processing efficiency...").

As per claim 9,

the rejection of claim 8 is incorporated;

Further the combination of Bacon et al. and Arimilli disclose

- wherein testing whether the failure of the speculative load (Arimilli,

    c4: 38-43) results from an access to a program object that is guarded

    comprises determining whether a bit for the address of the program object

    is set(Bacon - [0034], line 5, "...The high bit... is set...").

As per claim 10,

the rejection of claim 5 is incorporated;

Further the combination of Bacon et al. and Arimilli disclose

- wherein the recovery comprises testing whether the failure of the

    speculative load (Arimilli, c4: 38-43) results from a null

    reference([0039], line 20, "...allow null-check...").

As per claims 11, 12, 14, 15, and 17, they are the system claims reciting the same

limitations of method claims 5-8, and 10 respectively and are rejected for the same

reason set forth in connection of the rejections of claims 5-8, and 10 above.

As per claim 13,

the rejection of claim 11 is incorporated;

Bacon et al. disclose

- wherein compiling the object code comprises providing for setting a bit

when a program object is guarded ([0034], line 5, "...The high

bit... is set...").

As per claim 16,

the rejection of claim 15 is incorporated;

Bacon et al. disclose

- wherein testing whether the failure of the speculative load results from an

access to a program object that is guarded comprises determining

whether a bit for the program object is set ([0034], line 5, "...The

high bit... is set...").

As per claim 19, it is the machine-readable claim corresponding to method claim 2 and

is rejected for the same reason set forth in connection of the rejection of claim 2 above.

As per claims 22-28, they are the machine-readable claims reciting the same limitations of method claims 11-17 respectively and are rejected for the same reason set forth in connection of the rejections of claims 11-17 above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

It is noted that any citation [[s]] to specific, pages, columns, lines, or figures in the prior art references and any interpretation of the references should not be considered to be limiting in any way. A reference is relevant for all it contains and may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. [[See, MPEP 2123]]

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Wang whose telephone number is 571-272-5934. The examiner can normally be reached on Mon - Fri 8:00AM - 4:00PM. Any inquiry of general nature or relating to the status of this application should be directed to the TC2100 Group receptionist: 571-272-2100.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wei Zhen can be reached on 571-272-3708. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published

applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).

WEI ZHEN
SUPERVISORY PATENT EXAMINER